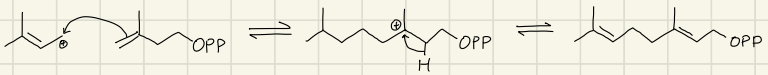
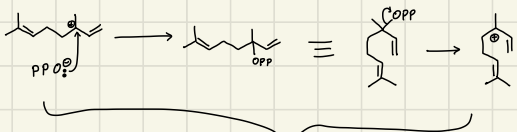
Isoprene / Terpene Background

Initial Chain Elongation

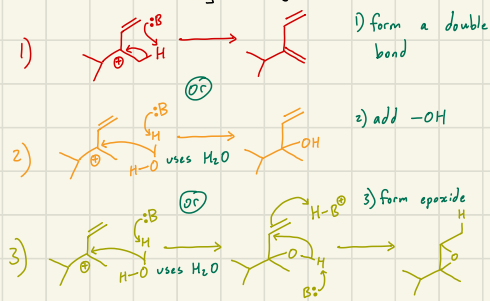


Full mechanism for changing stereochem step

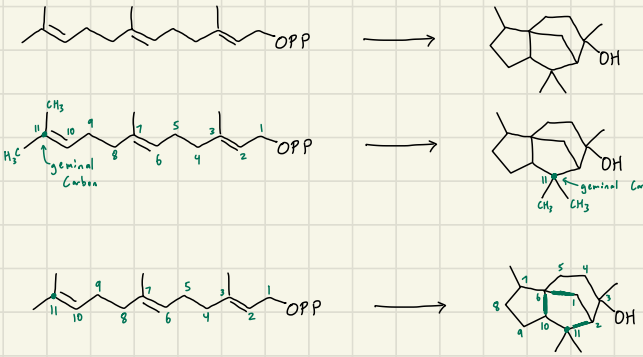


chem 27 abbr. isomerization →

Carbocation Quenching / Ending Step



Isoprene / Terpene Problems



Original problem

find geminal Carbon w <CH3 CH3

number Carbons on product

CORRECT

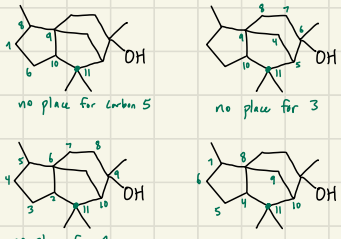
Bonds: 1 ≠ 6
double bond on 6 /7 ✓

6 ≠ 10
double bond on 6 (/7) used up
But double bond on 10 (/11) ✓

2 ≠ 11
double bond on 11 (/10) used up
But double bond on 2 (/3) ✓

WRONG

bc breaks Carbon backbone



no place for Carbon 5 | no place for 3

no place for 1 | no place for 3

WRONG

bc double bonds can't form required new bonds

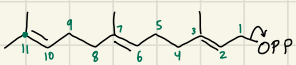
Bonds: 1 ≠ 6
double bond on 6 /7 ✓

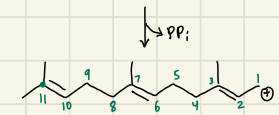
6 ≠ 10
double bond on 6 (/7) used up
But double bond on 10 (/11) ✓

4 ≠ 11
double bond on 11 (/10) used up
NO double bond available on 4 ✗

mechanism → on 2nd page →

Actual Mechanism

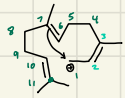




① ⊖OPP leaves to make carbocation

isomerization

② Redraw / copy product backbone

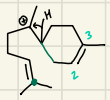


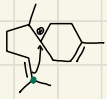
③ Use double bonds onto ⊕ to form the new bonds

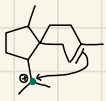
$

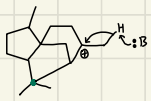
Use methyl $ hydride shifts to move around ⊕ to wherever needed

Hydride shift →

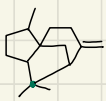








④ carbocation quenching to finish



In this case,

2 ═ 3 changed E → Z,

so use isomerization →

NOT ≡

(6═7 stayed E→E
11═10 no change)

⑤ After correct mechanism found, check if any E/Z double bonds change

↳ if yes, isomerization →

if no, ≡